



# MICROONDAS 242

## USER'S MANUAL AND APPLICATIONS

**MICROONDAS 242** is the greatest technologic creation in diathermy equipment; capable of covering the greatest professional demands in microwave therapy application whether continuous or pulsed.

We acknowledge the trust you have set upon us by the purchase of this equipment.

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## 1. INTRODUCTION

### 1.1 General considerations

The electrotherapy equipment manufactured by ELECTROMEDICARIN, S.A. has gained world-wide recognition for its excellent quality and manufacturing techniques.

The new **MICROONDAS 242** incorporates up to date electronic circuits and the latest technologies to obtain the best performance.

**MICROONDAS 242** is a high-technology equipment, therefore it is essential to follow carefully the instructions described in the present manual to obtain an adequate level of performance. This manual provides the necessary information for the installation, handling, maintenance and operation of the equipment.

**Read carefully the following instructions before operating the equipment.**

Compliance with the instructions will prolong the effective lifetime of the equipment, as well as ensure the improvement of its performance, resulting in benefit for the user.

### 1.2 Warranty (Only for Spain)

ELECTROMEDICARIN, S.A. guarantees **MICROONDAS 242** against any defect of manufacture for a period of 1 year from date of purchase.

This warranty includes the replacement without cost to you of any components that may be necessary to substitute.

This warranty includes the displacement expenses related to the repair of the equipment.

This warranty does not include any accessories or fungible material provided with the equipment.

For this warranty to be effective, the customer should contact the nearer Service of Technical Attention or, if this were not possible, the central in Barcelona (Spain).

The customer should also fill in the printed certificate enclosed with the equipment, and send it to the address detailed on it.

ELECTROMEDICARIN, S.A. assumes no responsibility in the following assumptions: (the equipment will automatically be excluded from the present warranty)

- If the equipment has been opened, adjusted, modified or repaired by personnel unauthorised by ELECTROMEDICARIN, S.A.
- If the equipment is used under different conditions to those indicated in this manual.
- If the electric installation, where the equipment is being used, does not conform to the safety requisites determined by the prevailing regulations.

## 2. INSTALLATION, HANDLING AND OPERATION

### 2.1 Generalities

Before connecting **MICROONDAS 242** you must check the following:

- The package should not have suffered any important damage during transport, and the equipment should not present external anomalies due to transport.
- If deterioration were important, it is recommended to inform the forwarding company and contact ELECTROMEDICARIN, S.A. Technical Service (+34 / 3 / 5730724).
- **MICROONDAS 242** works directly connected to the electric mains. In this case, it should be connected to a triple plug with tested ground connection.
- The electric installation, where **MICROONDAS 242** is to be used, should conform to the safety requisites determined by the prevailing regulations for buildings of medical use.
- Do not expose the equipment to excessive temperatures, do not install the equipment near heat focuses. The temperature range at which this equipment functions properly is from 10 °C to 40 °C.
- The atmospheric pressure range at which this equipment functions properly is from 700 to 1060 hPa.
- The relative humidity range at which this equipment functions properly is from 30 % to 75 %.
- Do not expose the equipment to adverse atmospheric conditions, such as: dust, humidity, direct sunlight, vibrations, etc.
- Do not install the equipment in hydrotherapy rooms, or places where the floor may be damped due to water spilling.
- ELECTROMEDICARIN, S.A. does not assume responsibility for any damage caused either to the equipment or to people as a result of an improper use of **MICROONDAS 242** by not conforming to the conditions detailed.

### 2.2 Verification

Check if the frequency and the voltage specified on the identification plate of the device correspond with those of the socket.

Use the model marked "220 V" in countries with voltages 220-230-240 V.

Use the model marked "110 V" in countries with voltages 110-115-120 V.

### 2.3 Keyboard, Meters and Connectors



Disconnection (turning off )



Connection (Turning on)



Attention, look up the COMPLEMENT DOCUMENTS



BF EQUIPMENT

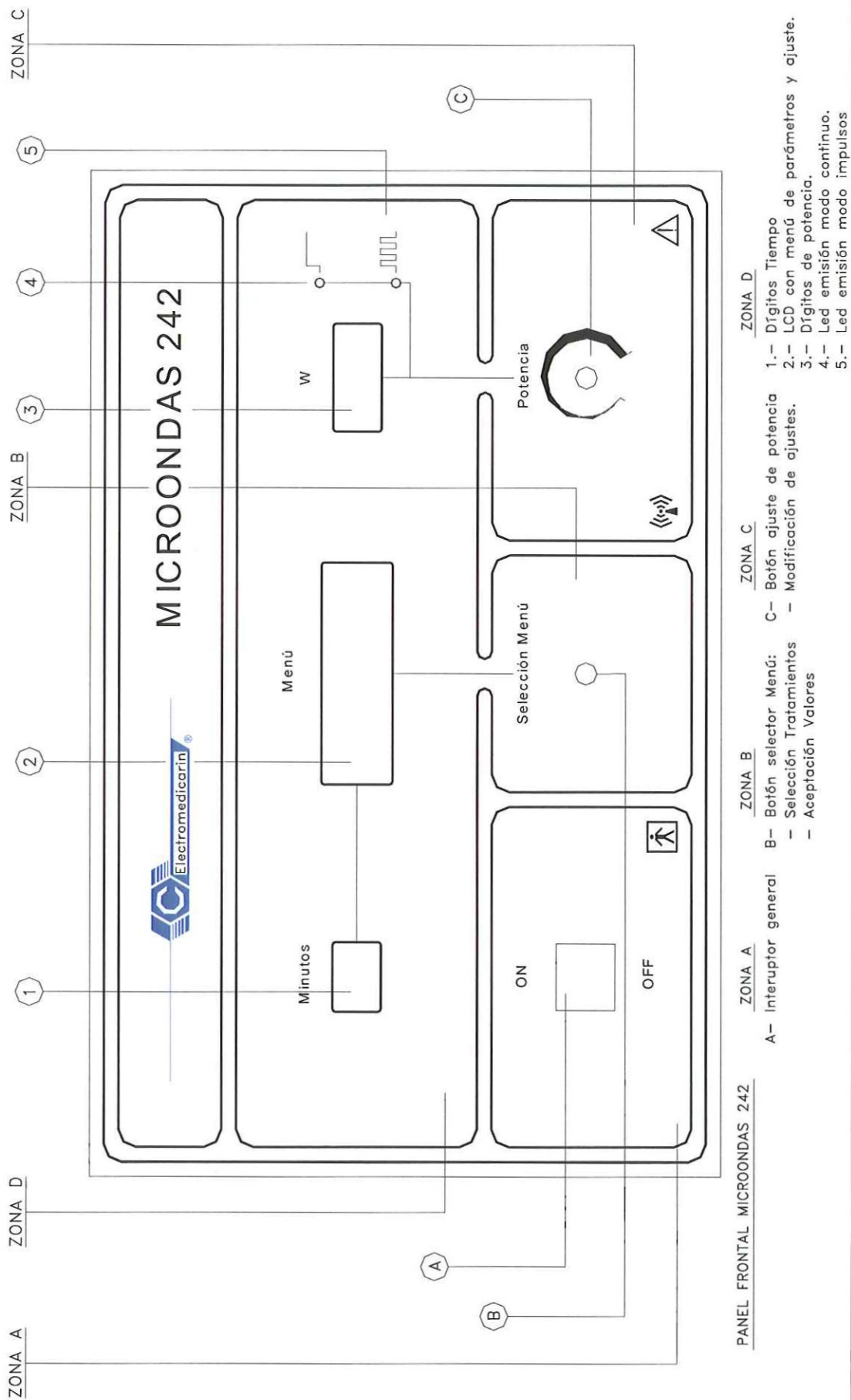


Figura 1



Frontal panel (see figure 1)

MICROONDAS 242 front panel has 4 areas clearly differentiated:

- A. General switch.
- B. Menu selector (control switch with three functions) the first one for selection of different treatments and their values, the second one for acceptance of the selected values and a third one for coming back to the menu.
- C. Power adjustment selector with two functions: the first one for the treatment's power adjustment and a second one, for changing the predefined values to new ones in adjustments.
- D. Windows, where all different parameters and modes are shown:
  - 1. Time digits.
  - 2. LCD that shows the menu and the treatment and adjustment parameters.
  - 3. Power digits.
  - 4. Continuous Emission
  - 5. Pulsed Emission

## 2.4 Connection

Before turning the equipment on, all the auxiliary components: Arm, Standard Irradiator and coaxial cable. The mains cable goes installed.

### 2.4.1 Auxiliar Arm Installation

This arm is subjected to the equipment through a support with two screws (DIN 912 M8x12). Firstly, a screw has to be placed on the left side of the equipment according to figure 5 with a plane washer; Secondly, the arm support has to be put into the screw and then, the top screw of the support has to be put, tighten both screws to be fixed through the Hallen key that goes together with the equipment as a fitting. Once the support is fixed with the auxiliary tools that go with the arm, take out the washer that goes in the lower part of the arm axle, put the axle into the support which is already fixed to the equipment and then put the washer once again.

### 2.4.2 Irradiator's Installation

Unwrap the Irradiator, verify that it hasn't been hit and put it into the whole of the arm external pressing the lever so as to let the irradiator's connector enter, releasing it and, finally the Irradiator is fastened to the arm. (See figure 4).

### 2.4.3 Installation of the high frequency cable

The high frequency cable has two different connector. Connect the connector of a higher diameter and coil it until it gets firmly fixed (See figure 6). So as to make sure this point, move the cable. If it still has mobility, we will have to verify the reason. Disconnect and connect it once again. Following that, the other external will have to be connected to the Irradiator that we have already installed in the arm. This connection has to be done pressing the connector mobile washers back and then connecting it to the Irradiator, release the washer and it will remain fixed. To ensure that it has been connected correctly, stretch the cable back and if it's firmly fixed to the Irradiator nothing will happen but if, on the other hand, it's not properly connected, it will come out from the connector easily. Finally, put (according to figure 6) the security washer that goes with the equipment's accessories in the cable's connector that connects to the Irradiator.

**WARNING: Turning the equipment on with the high frequency cable badly connected can originate the deterioration of the connectors, cable, Irradiator and equipment.**

**Any of the breakdown produced by this cause would be covered by the warranty.**

## 2.5 Turning on/off

When beginning a treatment or each time you want to turn on the equipment, press the ON/OFF Switch (A); the MICROONDAS 242 does a test illuminating for a moment the digits, LCD and the LEDs and then the LCD board with the Main Menu will remain illuminated.

## 2.6 Equipment's programming

### 2.6.1 CARIN Treatments

Taking the Main Menu that is in the alphanumeric board as a starting point:

\* MAIN MENU \*

CARIN treatments  
USER'S treatments  
Adjustments

Turn switch (B) (Menu Selection) displace the cursor. Once the option we are interested in has been selected, press switch (B). For example: we choose CARIN TREATMENTS and the display shows:

\* TREATMENTS \*

Vertebral column/ torso  
Extremities  
Traumatism

The three first options are visible in the display and the last one "Several" remains hidden. We could see it displacing the cursor (arrow placed on the left side of the options) through the switch (B). From these four options we choose as an example, Vertebral column / torso (first position in the menu). Press switch (B) and the alphanumeric board will show:

\* Vertebral Column / torso \*

different degenerative osteoarthritis  
Lumbarthritis  
Lumbago – without sciatica

Just like the previous menu, the three first positions are visible and the rest (in this section are eleven more) are hidden. Turning switch (B) displace the cursor and the other options will appear. To illustrate this example we have chosen Betcherew Disease, which occupies the sixth position in the menu.

Press swith (B) and the alphanumeric board shows:

Betchterew Disease  
Sens. Hot : medium  
Power: 100...125 W CP-LG  
Continuous Impulses

This is the recommended treatment. The Physiotherapist will decide which power and treatment is the most suitable and then press switch (B) and the alphanumeric board will show:

\* TREATMENT \*

Time treatment: <sup>TM</sup> 10  
Power: 100 watts  
Continuous Impulses

This is the option of minimum values for the treatment of Bechterew disease, the Physiotherapist has the option of increasing time or accepting the one that appears. Press switch (B) and the cursor will show the following option:

\* TREATMENT \*

Time treatment: <sup>TM</sup> 10  
Power: 100 watts  
Continuous Impulses



ACTIVATED TREATMENT  
T. Sel: 10 T. Treat.: X  
Power: 100 W continuous

\* TREATMENT END \*

T. Sel: 10 T. Treat.: 10

Power: 100 W continuous

~~~~~

~~~~~

During treatment we can modify power through switch (B) until hearing two acoustic signs and then turning it until reaching the desired therapy. To block the doses once again, press switch (B) again.

End of the Treatment remains flashing indicating that the treatment has ended and that we can select another one. Pressing switch (B) we come back to Main Menu.  
With the same procedure that we have previously described, we can choose any memorised treatment by the equipment and that we call CARIN Treatments.

### 2.6.2 USER Treatments

**\*\* TREATMENT \*\***  
Time Treat.: <sup>TM</sup> XX  
Power: XX  
Continuous Impulses

**\*\* TREATMENT \*\***  
Time Treat.: XX  
Power: <sup>TM</sup> XX  
Continuous Impulses

Turning switch (B) we'll choose the desired power. Once it has been reached, press switch (B) and the cursor will displace to Continuous, as it shows the board:

**\*\* TREATMENT \*\***  
Time Treat.: XX  
Power: XX  
™ Continuous Impulses

Here we have the option of choosing between continuous or Impulses. Once the option has been chosen, press switch (B) and the equipment will emit with the accepted parameters. Time and Power digits get illuminated with the selected values and the alphanumeric board shows:

**ACTIVATED TREATMENT**  
T. Sel: XX T. Treat.: XX  
Power: XXX W Impulses  
ψψψψψψψψψψψψψψψψ

**NOTE:** XX are the values chosen previously.

During treatment it's possible to modify power as it was indicated in the previous section.

Once the treatment has ended, the equipment emits an acoustic sign. Time and power digits will turn off and the alphanumeric board will show:

**\* TREATMENT END \***  
T. Sel: XX T. Treat.: XX  
Power: XXX W Impulses  
ψψψψψψψψψψψψψψψψ

Treatment End remains flashing indicating the treatment has ended and that we can choose another one. Pressing switch (B) we turn back to Main Menu.

If during parameters' programming we make a mistake and we want to rectify the value, we'll proceed by the following way. Assuming we choose as last option Continuous mode or Impulses mode and that we want to rectify the treatment time value.)

**\*\* TREATMENT \*\***  
Time Treat.: XX  
Power: XX  
™ Continuous Impulses

Press switch (B) for some seconds and the equipment will emit two acoustic signs. Release the switch and the cursor will displace to Power.

**\*\* TREATMENT \*\***  
Time Treat.: XX  
Power: ™ XX  
Continuous Impulses

Press once again switch (B) for some seconds and when the two acoustic signs beep, release the switch and the cursor will displace to treatment time.

**\*\* TREATMENT \*\***  
Time Treat.: ™ XX  
Power: XX  
Continuous Impulses

We can now modify the treatment time. Press switch (B), accepting this value we'll press once again to accept Power value and, finally, Continuous or Impulses mode.

### 2.6.3 Adjustments

**MICROONDAS 242** has an option to adjust the contrast of the LCD's display, language and Power, reserved this last one to a Technical Service.  
The Main Menu shows the following:

\*\* MAIN MENU \*\*  
CARIN treatments  
USER treatments  
Adjustments

Displace the cursor turning switch (B) until Adjustments, press switch (b) and the display will show:

\* Adjustment Process \*  
Display Contrast  
Language  
Power

Pressing switch (B), we'll choose Adjustment Display Contrast and the alphanumeric board will show:

ADJUSTMENT CONTRAST  
Contrast: XXX  
ψψψψψψψψψψψψψψψψ

**NOTE: XXX indicate the current value of the LCD's display contrast.**

Turning switch (B) we'll change the contrast value until we achieve the desired value. Once this value has been adjusted, press switch (B) and the display will show for some seconds:

\* DATA RECORDING \*  
Position: XX (XX)

Following it'll show:

\* DATA RECORDING \*  
ENDED

Pressing once again switch (B) we come back to Main Menu.

**To change language follow the same procedure.**

### 2.7 Manufacturer's advice

- Depending on the frequency of the equipment use we'll use a differentiated use procedure during the day. If treatments are carried out in intervals of less than five minutes, we recommend that the equipment remains lighted for all the time we work in that way. On the other hand, if the equipment is going to be used sporadically during day, we recommend to turn off the equipment after each treatment.
- Irradiator's displace has to be carried out until the area to be treated. (**Try not to manipulate the high frequency cable**), always using the arm end to place it with more facility in the position we desired.
- To change the Irradiator, turn the equipment off. Once you are sure that it doesn't emit, disconnect the high frequency cable from the Irradiator installed, first turning out the security ring and disconnecting the cable.
- Manipulate the Irradiators with care. Don't hit them so as to avoid that the antennas they contained work loose or release and cause a malfunctioning of the equipment.

### 3. TECHNICAL DESCRIPTION



### 3.1 Symbols and Classification

In accordance to EN 60601-1, rules for medical equipment systems, the **MICROONDAS 242** has the following classification:

- |   |                   |
|---|-------------------|
| • Type of protection against electrical discharges:           | Type I equipment  |
| • Protection degree against electrical discharges:            | Type BF equipment |
| • Protection against water:                                   | Ordinary          |
| • Security degree in presence of anesthetic flammable mixing: | Not adequate      |
| • Mode:   | Continuous        |

The following symbols on the equipment mean:



Equipment of type BF (degree of protection against electrical discharges)



Precaution on handling over a control. See user's manual and attached documents.



Non ionizing radiation.

### 3.2 Safety standards

**MICROONDAS 242** complies with the international safety standard:

- *EN 60601-1 Medical electrical equipment. General requirements.*
- *EN 60601-2-6 Particular requirements for safety in systems of microwaves therapy.*



About the regulations of Electromagnetic compatibility, the **MICROONDAS 242** equipment is in agree with the regulation:

- *EN 60601-1-2, Medical electrical equipment Part 1: General requirements of safety. Section 2: Collateral regulation. Electromagnetic compatibility. Requirements and Tests.*

If requested, ELECTROMEDICARIN S.A. will provide a copy report regarding the performed tests. Electrical Safety and Electromagnetic Compatibility.

### 3.3 Technical data

ELECTROMEDICARIN, S.A. will provide all the technical documentation of **MICROONDAS 242** to technical service of the user, if the customer request it. This technical service must be approved by ELECTROMEDICARIN, S.A..

**MICROONDAS 242** features are defined with the following data:

#### SUPPLY OF THE EQUIPMENT

Mains voltage	230V $\pm 10\%$ (230V version) 115V $\pm 10\%$ (115V version)
Mains frequency:	50/60 Hz
Mains fuse:	2 x 6A slow fusion (230V version) 2 x 8A slow fusion (115V version)
Standby consumption :	75 VA
Maximum consumption:	600 VA

#### GENERAL TECHNICAL DATA

Nominal power output:	250W
Emission frequency:	2,46 $\pm$ 0,02Ghz
Maximum allowed power with round field applicator:	250W
Maximum allowed power with long field applicator:	250W
Maximum allowed power with large field applicator:	250W
Maximum treatment time:	30 minutes (1 minute resolution)
Timer precision:	Better than 1 second.
Power reading error:	$< \pm 30\%$ or 2,5W (the larger)
Duty cycle:	100% (Continuous output) 50% (Pulsed output) (1 second ON / 1 second OFF)

#### OTHERS

- Dimensions: 89cm x 36cm x 50cm.
- Weight: 65Kg.
- Without. Selection of options and power dose by rotary endless encoders.
- Acoustic signal of end of treatment.
- CARIN treatments added.

### 3.4 Troubleshooting

The equipment that you has acquire has been designed for unnecessary regular maintenance.

The **MICROONDAS 242** has been designed with high quality components for minimum breakdown. However, if you detect any problem or you have any question, you can consult to the follow guide for breakdown detect.

Search the symptom that you has detect about the performance of your equipment in the section "troubles" and you have the row with "solutions".

In some situations the problems are not breakdowns and you can repair it. If you don't find your problem in this section you can ask your Technical service.

PROBLEM	SOLUTION
1. Any indicator on the front lights.	a) Test if the power check is connected (figure 1). b) Test if the power wire de red is connected (figure 1). c) Test the entry fuses. If one of their is fused, change it. See the section <i>Change of fuses</i> .
2. When the treatment begins appears a message error in the display.	a) Error E1, the system doesn't reach the power value entered. b) Error E2, the system exceed the power value entered. c) Disconnect the equipment and, after, test application wire. d) Error E3, the equipment doesn't emit power. e) Thermal error. f) In all this cases, if you can't solve the problem ask your Technical service.
3. When the treatment begins doesn't feel hot in the treatment zone when the power is selected al maximum.	Disconnect the equipment. a) Verify applicator wire. It must be perfectly tight in both sides of wire. b) Verify that the applicator wire hasn't faults. d) Ask your Technical service.
4. When the equipment is powered on, doesn't appear any message in the display.	Connect again the equipment with the menu encoder pushed. Select the desired value of display contrast.

#### Remember:

If you can't solve the problem, don't open the equipment, it has parts that the user can't operate. This is competence of the Technical service.

### 3.5 Mains Fuses

The unit **MICROONDAS 242** has two mains fuses, located in the side of the equipment. This fuses can be removed by the user. (See figure 2).

The operations are the follow:

1. Turn off the switch of the equipment, if it is on.
2. Remove the power wire form the socket.
3. With a screwdriver turn the piece located in the left side of the equipment and extract the piece with the fuse (there are two fuses, one per power phase).
4. Verify which fuse is damaged.
5. Change it verifying the technical features, see the part technical data.
6. Insert the piece with the fuses in their socket.
7. Connect the power wire in the socket.
8. Turn on the switch of the equipment, and verify their performance.



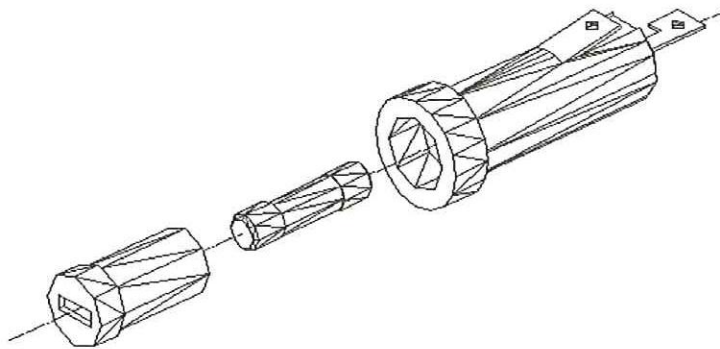


Figure 2

### 3.6 Technical service

The devices produced by ELECTROMEDICARIN, S.A. has been developed with the most advanced technologies in hardware and software then, their repair, is only allowed for us Technical service, or personal approved by Electromedicarin, S.A.

All the devices produced by ELECTROMEDICARIN, S.A. has reparation guarantee, through technical services distributed in different area and coordinates from Barcelona:

ELECTROMEDICARIN, S.A.  
c/ Torre de Cellers, nº 6  
Polígono Industrial Can Volart  
08150 Parets del Vallès  
Barcelona  
SPAIN

Telf: +34 93 573 07 24  
Fax: +34 93 573 03 31  
[www.electromedicarin.com](http://www.electromedicarin.com)  
[exportacion@electromedicarin.com](mailto:exportacion@electromedicarin.com)

#### 4. ACCESSORIES

REFERENCE	DESCRIPTION	UNITS
<b>1E05003</b>	<b>MICROONDAS 242 Device</b>	<b>1</b>
2A00048	Articulated bracket	1
2A03020	High Frequency Cable	1
2A15004	Circular irradiator 170mm	1
2A00021	Neon check light	1
3MIC0101	Security ring	1
3TOR912011	Screw DIN912 M6X20	2
HER032	Allen key nº 5	1
	Set of tools	1
2A15005	Large field irradiator ( <i>Optional</i> )	1
2A15006	Long field irradiator ( <i>Optional</i> )	1
	User's manual	1

## **5. GUIDE OF APPLICATION AND TREATMENTS WITH MICROWAVE**

### **5.1 Selecting Irradiator**

#### **5.1.1 Standard circular field irradiator**

It has to be applied at 5 cm from the skin turned to the area that has to be treated. If it moves away 15 cm, the treatment field increases but the effective dose drops so that W power has to be increased. With the irradiation control rod you can get an idea of the irradiation field.

The normal penetration is 5 cm. You can reach a greater penetration and homogeneity of the treatment with two consecutive sessions, for example, one to each side of the knee or one next to the other in the thigh.

#### **5.1.2 Long field irradiator**

Allows the treatment of an elongated area as the paravertebral musculature or the cuadriceps.

It has to be positioned from 5 to 10 cm of the skin, avoiding the immediate contact with projecting parts.

The effective penetration is 5 cm.

Two areas can be treated, as for example the both sides paravertebrals with two consecutive sessions.

#### **5.1.3 Big field irradiator**

It is the one that achieves a greater extension, depth and uniformity of treatment.

It is placed encircling with its curvature the immediate contact with projecting parts.

It can cope with a torso segment (thorax, lumbar region, dorsal, trapezium), hip, shoulder, both knees, etc.

### **5.2 Selection of continuous or pulsated modes**

#### **5.2.1 Continuous Emission**

It is a type of deep thermotherapy and has heat indications and contraindications.

The warming degree of deep fabrics depends on its composition (those with large saline liquid contents as the muscle and interstitial tissue become heater), on its location and depth, on the MO dose and on the local circulation. All these determines the dosage and the indications and contraindications or precautions.

##### **5.2.1.1 Dose**

Due to large factors which influence in the effect, the W emission power is only indicative and the real dosage is based on the heat sensation felt by the patient. The more accepted scale is:

DEGREE I = minimum heat, almost imperceptible.

II = soft heat

III = middle and pleasant heat

IV = strong heat, nearly intolerable

##### **5.2.1.2 Session duration**

With acute cases is enough with 5-6 minutes.

Normally until 10 minutes.

In special cases you can reach 20 minutes to achieve marked temperature increase or wide vasolidation.

Number of sessions.

It's very changeable and depends on the obtained effect.

It's recommended to start with 5-6 sessions (daily or alternated) and continue, if there is improvement, until a maximum of 20.

#### **5.2.2 Pulsated emission**

It doesn't produce appreciable increase of temperature in tissues and performs by non thermal effects, possibly in the magnetic field, with anti-inflammatory, analgesic and tissular stimulation (in ulcers) action.

##### **5.2.2.1 Dose**

As it doesn't generate heat it is not possible to value the patient feeling. Although the pick intensity is high, any harmful effect to the maximum dose of the unit is known.

In inflammation or traumatism cases is prudent no to pass of medium power scale. In chronic cases and specially in treatments of deep areas with big irradiator you can reach the upper stretch.



### 5.2.2.2 Session duration

It's shorter than the continuous modality. Generally from 3 to 7 minutes, until a maximum of 10 and exceptionally 15.

Number of sessions.

The same criterion as the one of the continuous emission. It starts with 5-6 and goes on until 20 depending on the result.

### 5.3 Patient Preparation

Sit correctly and relaxed. The furniture near the patient can not be metallic and can not have metallic surfaces, specially the table where the extremity rests.

The area that has to be treated must be open-air or covered with a sheet or towel. **The irradiator should not touch the skin, but it can be supported in some towel thickness.**

The adhesive strip, plasters, Elastoplast, nappies, earrings, rings, bracelets, etc. have to be taken away of the area that has to be treated and also of the close areas.

With facial treatments the patient has to wear the protective glasses that goes with the equipment.

It is necessary to ask the patient if he has metallic implants before the first treatment (sheet, screws, nails, endoprosthesis, dental pieces, DIU, etc.) in the area that has to be treated or close. If the patient wears pacemaker, internal stimulators or injection bombs.

Check the sensitivity, local circulation and presence of acute septic or inflammatory focus, specially if continuous MO is going to be applied.

### 5.4 Main Indications

#### 5.4.1 Microwaves in continuous emission

It is a sort of deep thermotherapy indicated to:

- Preparation for longevity of tendons adhesions and articulated contractions, increasing elasticity and decreasing the viscosity of the fibrous collagenous tissue. Apply MO to high doses (feeling of strong heat) before or during traction.
- Relaxation of the muscular spasms. Soft doses.
- Increase of the local circulation en of the tissues' metabolism. Chronic osteoarthritis.
- Half doses in applications until 10-15 minutes.

The continuous MO to half and high doses is contraindicated when there is acute inflammation.

#### 5.4.2 Microwaves in pulsated modality

As it is athermal, it actuates by direct action of the electromagnetic radiation and has magnetotherapy effects. It's indicated for:

- Recent contusions or sprains.
- Tendinitis and Entesitis
- Descompensated degenerative osteoarthritis.
- Different algias. Fibromialgias. Trigger points.
- Consolidation retards (pseudo-osteoarthritis)

### 5.5 Main contraindications

All electromagnetic radiation:

- Pacemaker and well-establishes stimulators.
- Metallic implants. Endoprosthesis. Sheets, screws, pins.
- Direct radiation in eyes, testicles.
- Pregnancy.

And in continuous modality the heat ones:

- Lack of skin or deep sensitivity.
- Inflammation or acute infection.
- Local Isquemia.
- Tumors.

## 5.6 Programmed Treatments.

MICROONDAS 242 has in **memory** a lot of treatments with the parameters defined in accordance with the most accepted guidelines and that can be directly selected or took as an example. The therapist has to accept or modify the parameters in accordance with his criterion and experience.

### 5.6.1 Spine / Torso

INDICATION	Irrad.	1.2.1.1.1.1 on/Pul	1.2.1.1.1.1	1.2.1.1.2 Heat sensation depending on modality	1.2.1.1.2.1 ession Time
Osteoarthritis	C G	C/P	75-125	Half	5-15
Lumbar osteoarthritis	L G	C/P	100-150	Half	10-20
Low back pain	C G	C/P	100-150	Half	5-15
Acute sciatica	C	P*	75-100	NO	4-7
Chronic sciatica	C G	C/P	75-125	Half / NO	6-10
Bechterew's disease	L G	C/P	100-125	Half	10-20
Cervical osteoarthritis	C G	C/P	75-125	Half	5-15
Neck pain	C G	C/P	100-125	Half	5-15
Acute cervical radiculopathy	C	P*	5-125	NO	5-7
Chronic cervical radiculopathy	C	C/P	5-125	Soft / NO	5-10
Torticollis	C	P*	100-150	NO	5-7
Coxigodynia	C	C/P	5-100	Soft / NO	5-10
Fibromyalgia	C G	C/P	50-125	Half / NO	5-10
Trigger points	C	P*	100-150	NO	5-7

### 5.6.2 Extremities

INDICATION	Irrad.	1.2.1.1.2.1 on/Pul	1.2.1.1.2.1	1.2.1.1.3 Heat sensation depending on modality	1.2.1.1.3.1 ession Time
Knee osteoarthritis	C G	C/P	90-125	Half / NO	5-15
Ankle osteoarthritis	C	C/P	75-120	Half / NO	5-10
Shoulder osteoarthritis	C G	C/P	100-150	Half / NO	5-15
Elbow osteoarthritis	C	C/P	75-110	Half / NO	5-10
Carpal osteoarthritis	C	C/P	75-100	Half / NO	5-10
Finger osteoarthritis	C	C/P	75-100	Half / NO	5-10
Hand osteoarthritis	C	P*	75-100	NO	5-7
Humeroscapular periartthritis	C G	C/P	75-125	Half / NO	5-10
Acute tendinitis. Entensitis	C	P*	75-100	NO	5-7
Chronic tendinitis. Entensitis	C	C/P	75-100	Soft / NO	5-10
Supraspinatus tendinitis	C	P*	75-125	NO	5-7
Epicondylitis Tennis elbow	C	P*	75-125	NO	5-7
Achiles tendinitis	C	P*	75-125	NO	5-7
Tendovaginitis	C	P*	75-125	NO	5-10
Bursitis	C	P*	75-125	NO	5-10
Calcaneal spur	C	P*	75-125	NO	5-10
Nerve entrapments	C	P*	75-125	NO	5-7
Südeck atrophy	C L G	P*	75-125	NO	5-10
Shoulder-hand syndrome	C G	C/P	100-125	Soft / NO	5-10

### 5.6.3 Traumatisms

INDICATION	Irrad.	1.2.1.1.3.1 on/Pul	1.2.1.1.3.1	1.2.1.1.4 Heat sensation depending on modality	1.2.1.1.4.1. ession Time
Subacute soft tissue contusion	C G	P*	100-125	NO	5-7
Subacute ligament sprain	C	P*	100-125	NO	5-7
Clotted Hematoma	C G	C/P	125-200	Half / NO	15-20
Stretch of scar tissue	C	C*	150-250	Strong	10-13
Subacute hand trauma	C	P*	75-125	NO	5-10
Painful stump	C	P*	150-200	NO	10-15
Hyperthrophic scars	C	C/P	150-200	Half / NO	5-10

### 5.6.4 Several

INDICATION	Irrad.	1.2.1.1.4.1 on/Pul	1.2.1.1.4.1	1.2.1.1.5 Heat sensation depending on modality	1.2.1.1.5.1. ession Time
Herpes zoster	C	C / P	50-100	Soft / NO	5-7
Constipation	G	C	150-200	Soft	10-15
Prostatitis	C G	C / P	75/100	Soft / NO	5-10
Cystitis	C G	C / P	75-100	Soft / NO	5-10
Visceral spams	G	C / P	75-100	Soft / NO	5-10
Dysmenorrhea	G	C / P	75-100	Soft / NO	5-10
Acute annexitis	C G	P*	75-100	NO	5-7
Chronic annexitis	C G	C / P	73-100	Soft / NO	5-10
Pressure sores	C	C / P	75-100	Soft / NO	5-15
Varicose ulcer	C	P*	75-100	NO	5-10
Chronic bronchitis. Bronchiectasis	G	C*	100-125	Half	10-15

G = Big field irradiator

R = Circular field irradiator

L = Long field irradiator



## ANNEX

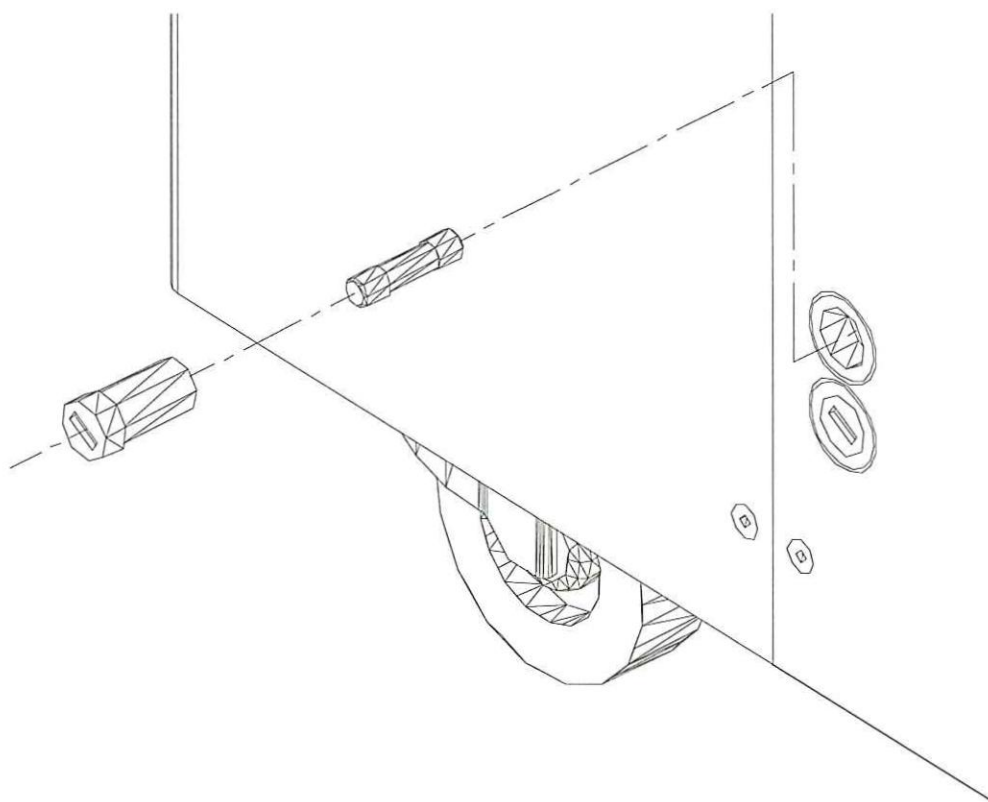


Figure 3

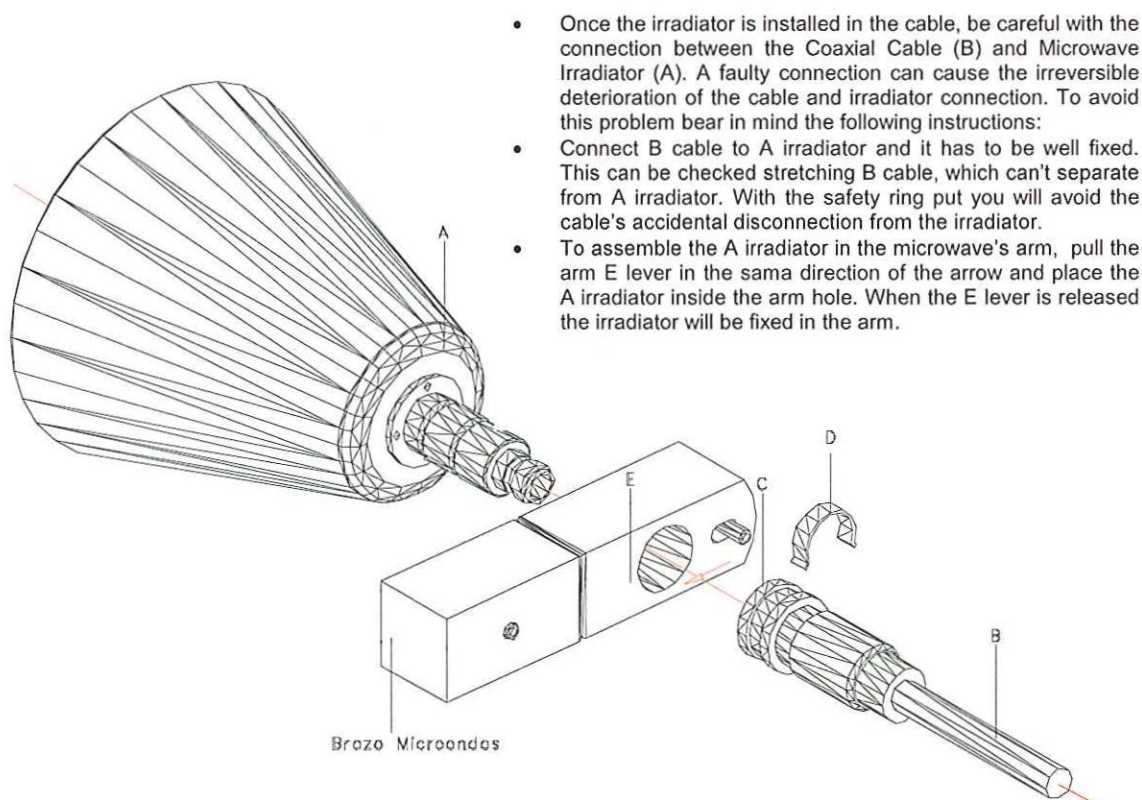


Figure 4

**Note:** Once the Irradiator has been installed in the cable, it's very important to bear in mind the connection between the Coaxial Cable (B) and the Microwave's Irradiator (A).

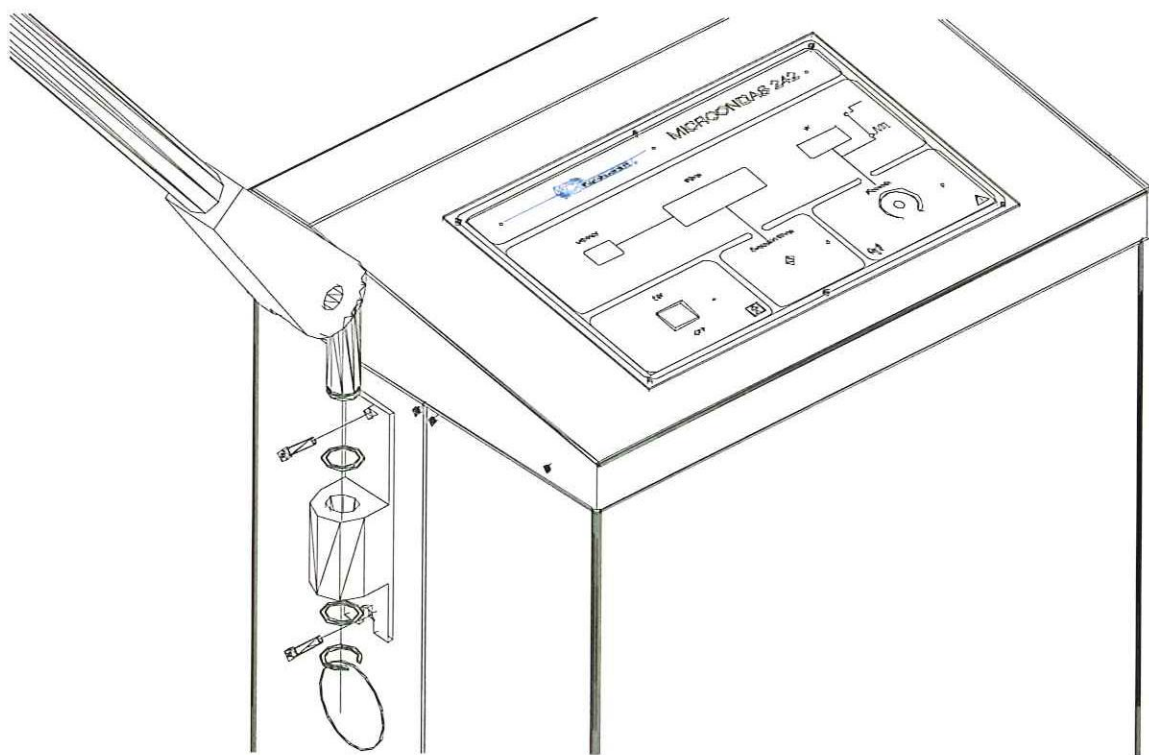


Figure 5

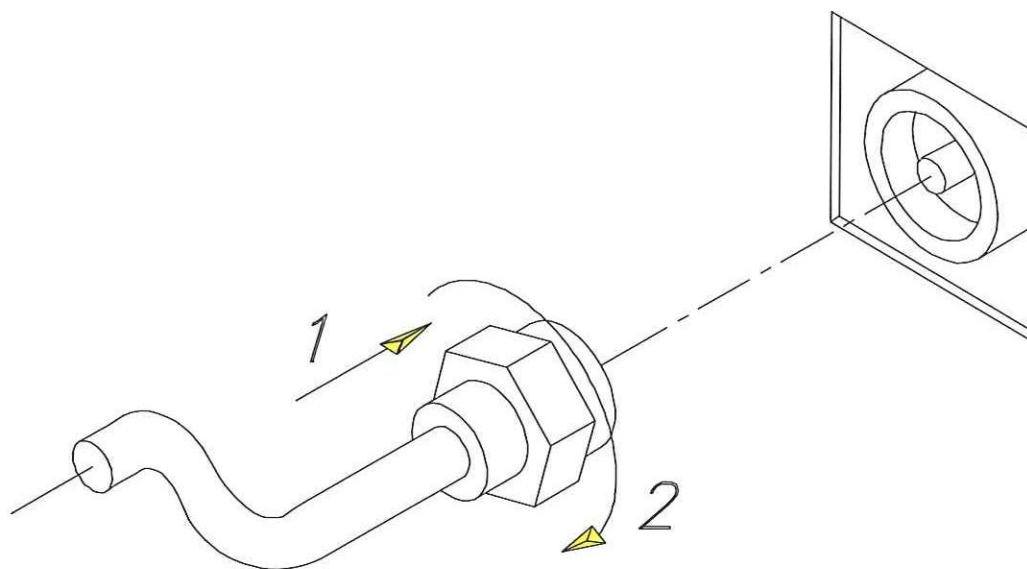


Figure 6